

43. Umbra Recta.

ANOTHER maner of wykyng be umbra recta. Yif it so be that thou mayst nat come to the baas of the tour, in this maner thou shalt werke. Sette thy rewle upon 1 till thou see the altitude, and sette at thy foot a prikke. Than sette thy rewle upon 2, and behold what is the difference between 1 & 2 & thou shalt finde that it is 1. Than mete the space between two prikkes, and that is the 12 partie of the altitude of the tour. And yif ther were 2, it were the 6 partye; and yif ther were 3, the 4 partye; et sic deinceps. And note, yif it were 5, it were the 5 party of 12; and 7, 7 party of 12; and note, at the altitude of thy conclusion, adde the stature of thyn heyghte to thyn eye.

44. Another maner conclusion, to knowe the mene mote and the argumentis of any planete. To knowe the mene mote & the argumentis of every planete fro yere to yere, from day to day, from houre to houre, and from smale fraccionis infinite.

(Ad cognoscendum medios motus et argumenta de hora in horam cujuslibet planete, de anno in annum, de die in diem.)

IN THIS maner shalt thou worche: consider thy rote first, the whiche is made the beginning of the tables fro the yere of oure lord 1397, and entere hit into thy slate for the laste meridie of December; & than consider the yere of oure lord, what is the date, & behold whether thy date be more or lasse than the yere 1397. And yif hit so be that hit be more, loke how many yeres hit passeth, and with so many entere into thy tables in the first lyne theas is writen anni collecti et expansi. And loke where the same planet is writen in the hede of thy table, and than loke what thou findest in directe of the same yere of oure lord whiche is passid, be hit 8, or 9, or 10, or what nombre that evere it be, til the tyme that thou come to 20, or 40, or 60. And that thou findest in directe wryte in thy slate under thy rote, and adde hit togeder, and that is thy mene mote, for the laste meridian of the December, for the same yere whiche that thou hast purposed. And if hit so be that hit passe 20, consider wel that fro 1 to 20 ben anni expansi, and fro 20 to 3000 ben anni collecti; and if thy nombre passe 20, than take that thou findest in directe of 20, and if hit be more, as 6 or 18, than take that thou findest in directe thereof, that is to sayen, signes, degrees, minutes, and secoundes, and adde togeder unto thy rote; and thus to make rotes; and note, that if hit so be

that the yere of oure lord be lasse than the rote, whiche is the yere of oure lord 1397, than shalt thou wryte in the same wyse into thy table in the same yere that be lasse, as I taught before; & than consider secoundes thyn entringe conteyneth, and so be that ther be 2 entrees, than adde hem togeder, & after withdrawe hem from the rote, the yere of oure lord 1397; and the residue that levethe is thy mene mote fro the laste meridie of December, the whiche thou hast purposed; and if hit so be that thou wolt weten thy mene mote for any day, or for any fraccion of day, in this maner thou shalt worche. Make thy rote fro the laste day of Decembre in the maner as I have taught, and afterward behold how sid from the meridie of Decembre, & with that entere with the laste moneth that is ful passed, and take that thou findest in directe of him, and wryte hit in thy slate; and entere with as many dayes as be more, and wryte that thou findest in directe of the same planete that thou worchest for; & in the same wyse in the table of houres, for houres that ben passed, and adde alle these to thy rote; and the residue is the mene mote for the same day and the same houre.

45. Another manere to knowe the mene mote.

IF THOU wolt make the mene mote of any planete to be by Arschieles tables, take thy rote, the whiche is for the yere of oure lord 1397; and if so be that thy yere be passid the date, wryte that date, and than wryte the nombre of the yeres. Than withdrawe the yeres out of the yeres that ben passed that rote. Ensampul as thus: the yere of oure lord 1400, I wolde witen, precise, my rote; than wroot I furst 1400. And under that nombre I wrote a 1397; than withdrew I the laste nombre out of that, and than fond I the residue was 3 yere; I wiste that 3 yere was passed fro the rote, the whiche was writen in my tables. Than afterward soghte I in my tables the annis collectis et expansis, & amonge myn expanse yeres fond I 3 yere. Than tok I alle the signes, degrees, & minutes, that I fond directe under the same planete that I wroghte for, and wroot so many signes, degrees, and minutes in my slate, and afterward added I to signes, degrees, minutes, and secoundes, the whiche I fond in my rote the yere of oure lord 1397; and kepte the residue; and than had I the mene mote for the laste day of Decembre. And if thou

woldest wete the mene mote of any planete in March, Aprile, or May, othe in any other tyme or moneth of the yere, loke how many monethes and dayes ben passed from the laste day of Decembre, the yere of oure lord 1400; and so with monethes & dayes entere into thy table ther thou findest thy mene mote ywriten in monethes & dayes, and take alle the signes, degrees, minutes, and secoundes that thou findest ywryte in directe of thymonethes, & adde to signes, degrees, minutes, & secoundes that thou findest with thy rote the yere of oure lord 1400, & the residue that levethe is the mene mote for that same day. And note, if hit so be that thou woldest wete the mene mote in any yere that is lasse than thy rote, withdrawe the nombre of so many yeres as hit is lasse than the yere of oure lord a 1397, and kepe the residue; and so many yeres, monethes, & dayes entere into thy tabelis of thymene mote. And take alle the signes, degrees, and minutes, and secoundes, that thou findest in directe of alle the yeris, monethes, & dayes, and wryte hem in thy slate; and above thilke nombre wryte the signes, degrees, minutes, and secoundes, the whiche thou findest with thy rote the yere of oure lord a 1397; and withdrawe alle the nether signes and degrees fro the signes and degrees, minutes, & secoundes of other signes with thy rote; and thy residue that levethe is thy mene mote for that day.

46. For to knowe at what houre of the day, or of the night, shal be flode or ebbe.

FIRST wite thou certainly, how that haven stondest, that thou list to werke for; that is to say in whiche place of the firmament the mone being, maketh fulle see. Than awayte thou redily in what degree of the zodiak that the mone at that tyme is inne.

Bring furth than the labelle, and set the point therof in that same cost that the mone maketh flode, and set thou there the degree of the mone according with the egge of the label. Than afterward awayte where is than the degree of the sonne, at that tyme. Remeve thou than the label fro the mone, and bringe and sette it justly upon the degree of the sonne. And the point of the label shal than declare to thee, at what houre of the day or of the night shal be flode. And there also maist thou wite by the same point of the label, whether it be, at that same tyme, flode or ebbe, or half flode, or quarter flode, or ebbe, or half or quarter ebbe; or ellis at what houre it was last, or shal be next by night or by day, thou than shalt esely knowe, &c. Furthermore, if it so be that thou happe to worke for this matere aboute the tyme of the conjunction, bringe furthe the degree of the mone with the labelle to that coste as it is before seyd. But than thou shalt understonde that thou may not bringe furthe the label fro the degree of the mone as thou dide before; for why the sonne is than in the same degree with the mone. And so thou may at that tyme by the point of the labelle unremeved knowe the houre of the flode or of the ebbe, as it is before seyd, &c. And evermore as thou findest the mone passe fro the sonne, so remeve thou the labelle than fro the degree of the mone, & bringe it to the degree of the sonne. And worke thou than as thou dide before, &c. Or elles knowe thou what houre it is that thou art inne, by thyn instrument. Than bringe thou furth fro thennes the labelle and ley it upon the degree of the mone, and therby may thou wite also whan it was flode, or whan it wol be next, be it night or day; &c.

Here end Chaucer's Propositions supplementary to his Treatise on the Astrolabe.